

Maintenance in China



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Maintenance and beyond – the death of “EAM”

In a recent interview by China Plant Engineering magazine, I spoke of the “death of EAM”, a statement that proved highly controversial!

How can software introduced more than 15 years ago, long before mobile phones and the internet became common, represent a modern approach to maintenance? Not to mention that the so-called “EAM” is in every single aspect identical to what we have known in industrial circles as “CMMS” for over 30 years. All this would be laughable if we were not faced, from time to time, with customers who insist they want EAM, not CMMS. Customers who end up selecting software packages that I would consider technologically obsolete, and implement them in the same way western companies did 30 years ago. And all this is happening in 2012’s China!

First, technology. How many of the “modern” EAM systems implemented in China are even web-based, a technology I clearly remember was introduced around 1999 and is supposedly prevalent today? Most are not, they run on PC clients (requiring local installation and maintenance). No amount of IT jargon (from “J2EE” to “SOA”) in sales presentations will ever change that fact. Today some of our Siveco China customers have giant touch-screens, mobile devices with RFID scanning capability (for equipment tags) and iPad solutions for managers... All running on the Internet, with devices connecting on the 3G network. That’s 2012 technology! Yes, EAM is dead, from a technological point of view.

Second, functionality. The term “EAM” (with E as “Enterprise”) was coined to denote more functionality. I challenge any of our readers to give me one single EAM functionality that would be missing in a CMMS! The term EAM was a marketing trick, just like in the late 90s, at the top of the ebusiness bubble, some companies started to talk about eEAM... When the bubble burst, red-faced IT marketers quickly dropped the e! I lived through those times, boy did we have fun! My point is: EAM does exactly the same thing as CMMS, these are just two words for the same exact thing.

I know what some of those EAM people are going to say: the functionality may be the same, but the concept is different! Let’s look at the concept then: admin-centric, focused on time and cost control, with heavy approval processes! A lot of paper to print! A secretary or two to input data for engineers and to compile reports for the boss! What a concept! Look instead at what our customers are implementing today in China: solutions anyone in the organization can use, from the big boss (on his tablet) to the technician (on smartphone). No paper, no secretary, no absurd focus on time and cost (very seldom at the top of the agenda in China) but instead on operational risks. EAM, as a concept, is dead.

How dare this small company tell us that EAM is dead? How can those IT giants be wrong? Seek truth from facts! Successful EAM implementations in China are few and far between! Projects sold



as 6-month endeavors end up taking several years! Systems that cost millions of RMB are used only by a few secretaries to carry out administrative tasks (“our system is just a big fax machine” as one client put it). That’s the advantage of being larger than your clients, you can blame them for failure (“your team was not mature enough for our great system”) and they happily come back to you with more money. I won’t fight windmills... But don’t tell me EAM is superior. This model is dead, as far as results are concerned!

You can continue to live in an imaginary world where “EAM” is modern but what you get is technology from the early 2000s to support concepts invented in the 1980s, which takes several years to implement... Or you can come join us in the reality of today’s China – where real customers already use, on a very large scale, cloud computing, mobile solutions, to support risk management of large complex assets, in a quickly evolving business environment, subject to tightening regulations. Customers that implement such tools to reshape their operations in a matter of months rather than years, across hundreds of sites, with thousands of users on web, tablets, mobile devices... without any paper, without any “secretary” to interface with the system. Customers that measure ROI from their projects, often obtained in less than a year. Welcome to the real world! Welcome to Siveco!

Bruno Lhopiteau
General Manager of Siveco China

Technology-enabled technicians vs. the intelligent plant: the Chinese view

This article is based on a presentation given by Siveco China's GM Bruno Lhopiteau at the 6th Process Industry Engineering & Maintenance Congress in Shanghai on September 6-7, 2011

Introduction

Technological innovations, such as the use of mobile technologies, bring new opportunities to realize quick improvement in the maintenance management practice. Some of these new tools have proven particularly well-suited to the needs of the Chinese industry. Indeed, far from the "Science-Fiction" image these technologies may carry, they have already proven highly efficient in typical maintenance organizations in China, even in low-tech plants: example of immediate ROI include the "reviving" of underused maintenance management systems (CMMS, also known as "EAM", sometimes part of the corporate ERP system). The experience of Siveco China shows that the Chinese maintenance market differs significantly from that of the West and companies operating in this country should focus more of their technological investment on people – engineers and technicians – rather than on the plant itself. Hence the title!

Maintenance "with Chinese characteristics"

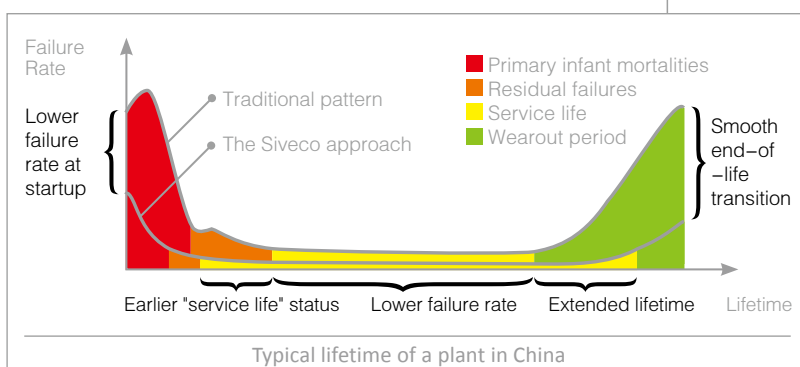
The typical plant lifecycle in China starts with construction, notably fast and cheap. Most contractors adopt a flexible "quick-fix" approach to solving problems onsite, which often results in bigger problems during operations. As a direct consequence, the residual failure rate tends to be high, which is sometimes hidden by the good reactivity of the repair teams and lack of root cause analysis i.e. nobody finds time to truly record and understand the problems. A few years down the line, the breakdown rate constantly increases, characterizing the end-of-life period. Plants tend to age much faster in China than elsewhere, leading to early replacement of equipments. As this is often hidden within larger extension projects (since most companies continue to grow their business), problems are not easy to identify and no reliable maintenance history (for example in the form of computerized records) is available to support improvement decisions. It is interesting to note that outsourcing maintenance to a third-party service supplier does not help, as more and more companies are finding out.

but also to prepare maintenance early; this latter opportunity is often ignored. A slowly growing awareness of maintenance can however be observed, fueled by the experience accumulated by large plant owners (MNCs with a long experience operating multiple plants in China, state-owned groups) as well as high-profile accidents that have received extensive media coverage in the past few years (the latest being elevators/escalators accidents, which investigators blamed on poor maintenance practices). The global trend for more sustainable or green factories may also have made a positive contribution, although the link with maintenance is not always understood.

As far as people are concerned, the Chinese maintenance market is characterized by a lack of understanding and practice of methodologies (acronyms like TPM or RCM may be known, but not their true meaning, even less the practices behind). Chinese engineers are generally too specialized and lack the multidisciplinary skills so crucial to manage maintenance (basic knowledge of mechanics, electricity, automation and perhaps an overall business view to understanding the impact maintenance has on the operations). Staff turnover is often listed as an issue, especially with regards to skilled personnel and management staff (including expatriate managers on assignment for 2-3 years only). The HR situation has a major impact on all aspects of the "maintenance management" discipline – all the way from fault diagnosis. While service providers (outsourcing) face the same problem as plant owners, they usually find it even harder to attract or retain people, lacking the brand name recognition of major industrial groups.

One of the great advantages of the Chinese workforce is its openness to the use of technology and perhaps even its love of new technologies. We have observed in the past 10 years that high-tech can be a powerful motivating factor: people like it, see it as a chance to learn and better themselves, and realize the company invests in them. This provides us with a great opportunity to use technology as a shortcut to implement methodologies and best practices. It is obviously a two-sided coin, the risk bring to implement technology for the sake of it, without clear improvement plan. In the context of "smart plant" and higher automation, technology has often been misunderstood as a replacing people. Unfortunately (or perhaps, fortunately) this approach almost inevitably fail, complex high-tech plants being even more reliant on skilled operators...

Some of the latest trends include a growing awareness of maintenance, clearly observable in the market, but little actual action taken (companies acknowledge they have a problem, but remain at a loss to find solutions). We see, however, continuous funding for trendy projects like "green" and "sustainability" initiatives, which are often closely related to maintenance. Due to increasing labor cost in China, companies are considering more automated production processes, leading to even more complex maintenance challenges and increasing reliance on a highly skilled workforce. In general,



The market remains dominated by greenfield projects, thanks to the rapid economic development. The focus being on building "cheap and fast", maintenance has traditionally not been a priority. Greenfield projects provide opportunities to use the latest technologies in plants,

At Siveco,

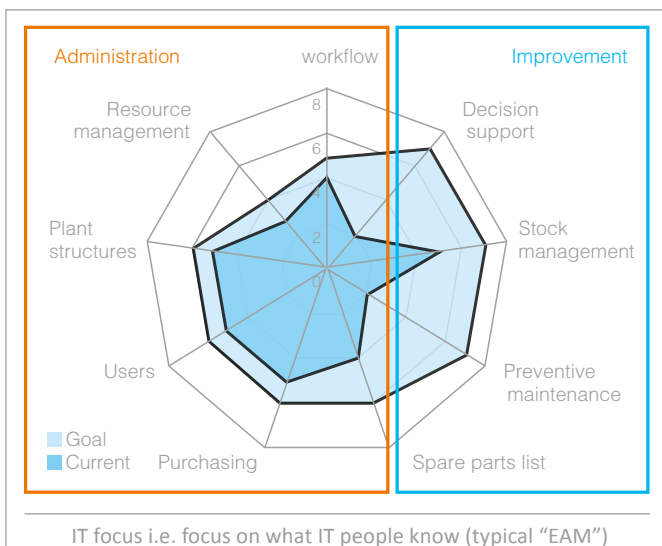
we believe that China is inventing a new model for maintenance.

Multinationals (plants and their suppliers) continue to try implementing Western solutions to Chinese problems, an approach that has failed over and over again, while many local companies attempt to follow the same erroneous path. Outsourcing has become a popular topic, but the focus on direct cost reduction (labor cost) and the lack of skilled resources (subcontracting firms competing for resources in a tight job market with better-known industrial companies) remain major obstacles to the successful development of this business model. In the meantime, new consumer technologies have become prevalent among employees, most notably mobile technologies – who doesn't have a smartphone, daily access to websites, a weibo account etc.

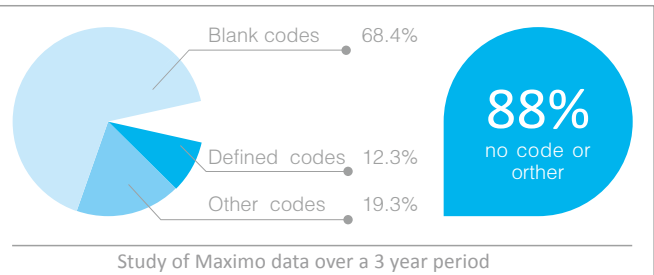
Why most technology projects fail

The fact is that most technology projects conducted in China fail to deliver tangible results. Projects are often conducted in the same manner as in the West, although conditions are very different: the motivation for the projects, cost structures, issues, skills all greatly differ from Western markets. We at Siveco do not believe the common wisdom that China will become more similar to the West in the future, i.e. immature markets will all evolve to a perfect Western model. In fact, we strongly disagree with this idea, which is not consistent to what we observe in the field. On the contrary, we believe that China is inventing a new model for maintenance, which can perhaps even apply to the West in the future (we are already experiencing this in our export projects with Chinese construction companies building plants overseas).

Looking more specifically at the implementation of computerized maintenance management systems, audits results show a strong focus on IT-related aspects of the projects (technical infrastructure, approval workflows of work orders etc.) which brings little or no practical benefits to the plants, while most projects are badly lacking in terms of improvement support (reliability analysis, decision support). This is mainly due to the pure IT focus of system suppliers operating in China and to projects being led by corporate IT in many companies.



An easy-to-understand example would be the utilization of fault codes. Not always implemented, this essential functionality of a CMMS forms, together with a well-structured equipment tree, the basis for all analysis and improvement, is usually not usable due to poor coding and utilization.



Specific concerns exist for SAP projects, characterized by virtually unlimited budgets and no demand for ROI... Due to the complex nature of such projects and the lack of SAP Plant Maintenance resources in China, the implementation of SAP PM usually relies on cascading service contracts: software vendor, consulting firms, freelancers, IT departments... In such a context, many suppliers have become experts at escaping their responsibility: failures can always be blamed on someone else and ultimately on the customer's "lack of maturity". Based on years of experience with SAP customers, our recommendation is always: do not fight SAP, use it! Two complementary ways we know of can be considered: first of all, manage SAP projects like any other industrial projects, with ROI and clear responsibilities, often with the help of a third-party "owner's engineer" with related skills. Second, add a "usability layer" to SAP, a piece of technology designed to facilitate output and input of data into SAP for average users. In our view, this "usability layer", often a mobile solution interfacing to SAP, is the perfect trick to introduce the industrial team into a SAP project.

Other technologies we often assess as part of our maintenance audits include plant automation, sometimes excessive and offering little value-added, with control systems often left partly unused or even disabled. Condition monitoring systems, when not online, almost always end up with portable instruments gathering dust on a shelf, due to lack of consistent and systematic management routines. Interestingly, when those systems are integrated with the CMMS, they often send useless data (alarms and measurements that cannot be handled in the CMMS). This enormous waste of technology can be traced back to the vendor's lack of real-life experience of maintenance in China and... the customer's lack of maturity.

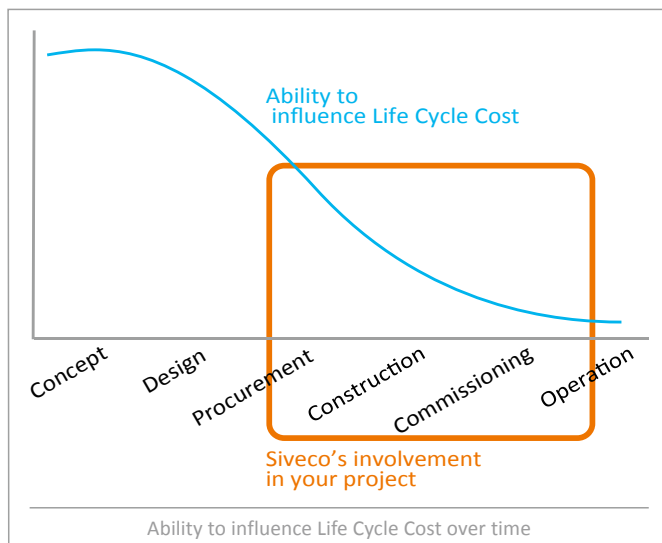
All these failures to achieve real-life improvement from projects are almost always blamed on people. We often hear plant managers complaining that their "people are no good", "we lack of maturity", "our engineers were not ready for this", etc. and hoping things will get better over time (or perhaps waiting for the next job assignment).

In our view, this lack of maturity is a given, a characteristics, of the Chinese maintenance market. Vendors and customers alike need to see it

Preparing maintenance from the construction stage

The earlier the better

Experience has shown that the earlier reliability and maintainability are taken into account in a construction project, the better. These should be specifically addressed from the design stage of a project, as illustrated below.



This approach, which consists in paying more attention to maintenance earlier in the project, to reduce future operation cost, differs markedly from that of Chinese engineering and construction companies, which emphasize cost control during construction with progressive adjustments and modifications of the design as the project moves ahead. Local EPC companies still lack an overall lifecycle perspective, hence the difficulty to obtain as-built drawings or preventive maintenance recommendation from them.

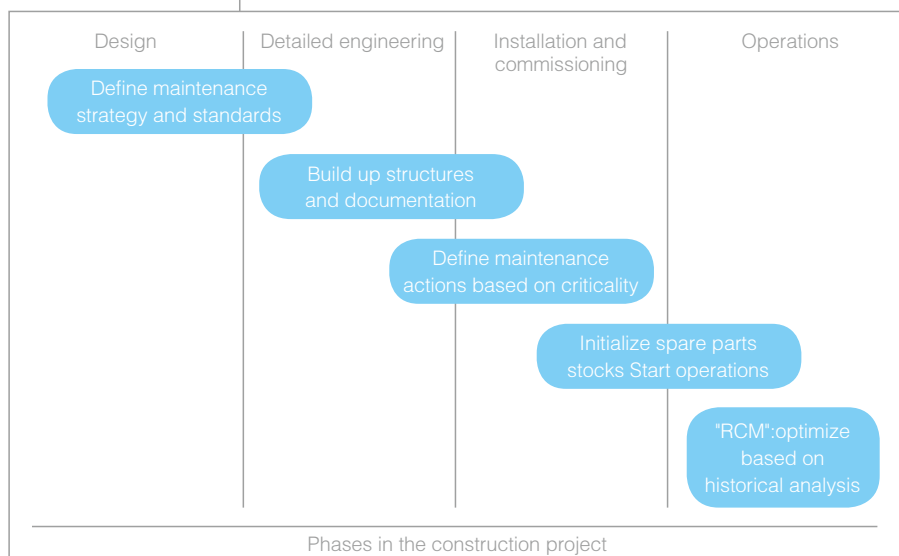
While the resulting speed and cost advantage has proven critical to support the country's fast development, this construction-driven approach has also led to problems – most notably in terms of safety (deadly accidents at various construction sites have made headlines in the past few years) and maintenance (early replacement of major equipment, spiraling cost and reliability problems after a few years of operation). Partly as a result of this lack of preparation, maintenance is often purely reactive (firefighting) in the operation phase.

As a direct consequence of this lack of early concern for maintenance during construction, we observe that the quickest reliability improvements obtained during Siveco project in China are those related to design or installation problems, which should have been identified during commissioning, but instead go undetected for years. Quick fixes are applied, problems go unreported and no analysis is ever carried out. By conducting systematic root cause analysis, we are able to identify the problems and trace them back to construction issues.

The Siveco Way

Based on a long experience of greenfield infrastructure projects all over the world and lessons learnt in China in the past 10 years, Siveco has developed a specific expertise working alongside EPC companies and their equipment suppliers during the construction phase, ensuring smooth transfer of technical documentation from construction to operation, supporting plant commissioning and start-up with an accurate technical database and enforcing good maintenance practice from day one. Siveco China teams supports both owners and EPC companies to better prepare operations. An project with China National Electric Equipment Corporation (CNEEC) in Malaysia was covered in a previous newsletter^[1], as well as another project with China International Water and Electric Corporation (WEC) in Sudan^[2]. The same approach was employed with SwireSITA's waste incinerator in Shanghai Chemical Park^[3] and for the construction of the new French Embassy in Beijing^[4].

In China more than anywhere else, the CMMS turns out to be the ideal tool to bring structure to what would otherwise be perceived as a very abstract concept ("Prepare for maintenance? But the equipment has not yet been delivered!"). A concrete (deliverable)



For a large process plant, this approach

could easily save millions of RMB every year in indirect or consequential losses.

system, the CMMS allows us to clearly define steps in the maintenance preparation project. The “high-tech factor” introduced by the CMMS is of course a key motivator for engineers involved in the project.

The figure above summarizes the Siveco approach for maintenance preparation during a construction project based on the utilization of the CMMS.

The major benefits of this approach are highlighted below:

- **Detailed, accurate and easily accessible technical documentation**

By working directly with suppliers, detailed and accurate technical documentation (specifications, contracts, spare-parts lists, etc.) can be made available to operation engineers in a structured manner directly in the CMMS, instead of being stored in containers, in shelves or even missing. This has a direct and immediate impact on the accuracy and efficiency of the work as well as on day-to-day decisions (where to purchase a part, how to disconnect an equipment etc.)

- **Integration with automation systems**

The construction phase is obviously the best time to integrate the CMMS with automation and supervision systems (DCS, SCADA) that contain essential data for maintenance planning, as both systems can be designed and build accordingly. Large cost savings can be expected compared to similar integration performed in operation (with an existing supervision system). More importantly, more advanced functionality can be obtained, such as a full HMI integration (operators can access technical documentation directly from their supervision HMI) and more meaningful data transfer (e.g. traditional interfaces will transfer alarms and measurements to the CMMS indiscriminately, while in a joint implementation, the process will be designed to match the maintenance strategy).

Working jointly with DCS suppliers remains Siveco’s privileged way to involve in large infrastructure projects. Siveco boasts a long history of cooperation with leading automation vendors in various industries (ABB, Alstom and GE in the power industry, PCVue and Singapore Technologies in urban transportation and many more). This was covered in a previous newsletter^[5].

- **Support for safety during construction**

The CMMS can be used before operation starts, with a focus on safety management: before work can be performed, a supervisor must approve related Work Permits in the CMMS, detailing the qualifications, tools, safety measures and other PPE required. By doing so, the supervisor takes the responsibility for the safety of the job and the traceability of the decision is ensured. In the event of an accident or near-miss, the event and its circumstances will be

systematically documented and analyzed, leading to a Corrective Action Report or Hazard Report, with clear actions for improvement. Again, even near-misses are clearly documented and fully traceable decision paths.

The CMMS is the main tool to support this process. Safety audits are then greatly simplified and can be carried out at any time – the lack of proper documentation being a punishable offense in itself. This idea was further developed in an article^[6] published a few years ago in Gongkong magazine (in Chinese only).

- **Support for commissioning**

Engineers supervising the commissioning process can be equipped with mobiles, allowing them to record each step of the process and corrective actions if required, ensuring follow-up of actions performed by the construction company or equipment suppliers. Faults occurring at an early stage – commissioning, trial runs – can be accurately documented in the CMMS historical database. Without a proper historical record, information will be lacking for future diagnosis, resulting in delays and temporary fixes rather than permanent resolutions of problems (for example design problems may not be identified and quick fixes may be applied instead, a very common practice in China).

The big picture

For a major infrastructure project, such as a large process plant, the approach described above could easily save millions of RMB every year in indirect or consequential losses: downtime, increased repair costs, recurring problems etc. By taking maintenance into account early, it takes less time to get into the “useful lifetime” part of the famous reliability “bath-tub” curve, while the “wearing out” part will be delayed (see bathtub curve on page 3).

Links:

[1] <http://tinyurl.com/RPIIMalaysiaEN>

[2] <http://tinyurl.com/meroweEN>

[3] <http://tinyurl.com/sitaEN>

[4] <http://tinyurl.com/frenchembassyEN>

[5] <http://tinyurl.com/tipsmayEN>

[6] <http://tinyurl.com/metroarticleCN>

Leading PVC maker revolutionizes its inspection process, adds value to SAP

Hanwha Chemical (Ningbo)

Hanwha Chemical (Ningbo) was established in 2008 in the Ningbo Daxie Development Zone, a national-level economic and technical development zone in Zhejiang province, as a subsidiary of Fortune 500 Company Hanwha Group (www.hanwha.co.kr), a diversified Korean conglomerate. Hanwha Chemical was the first producer of polyvinyl chloride (PVC) in Korea in the 1960s, a pioneer that laid the groundwork for the nation to emerge as a leading chemical producer: the history of Hanwha Chemical epitomized the history of the petrochemical industry in Korea.

With a total investment of 363 million USD, the Ningbo plant is the largest foreign-invested project in the zone and one of Hanwha Group's largest investments outside of Korea, targeting the world's largest PVC market, China. Production started in December 2010. The plant boasts an annual production of 0.3 million tons of PVC, 0.5 million tons of EDC, and 0.3 million tons of VCM, with an annual sales revenue of approximately \$ 2.3 billion.

The challenges of optimizing the inspection process

Hanwha Chemical's complex chemical production units operate around the clock and face tough safety, environmental and mechanical integrity regulations: ensuring reliability, availability and safety is at the core of the company's business. The Ningbo plant has established good operation and maintenance practices, based on the group's long experience and the know-how accumulated by its local engineers and technicians. Preventive maintenance, more particularly in the form of inspections to detect early signs of failure and monitor process parameters, plays the major role in the company's operation. Hanwha has also implemented SAP, the de-facto ERP standard in the petrochemical industry, including SAP Plant Maintenance module to support its maintenance process.

As often observed in the chemical industry, however, the management of inspections, both operation and maintenance checks, measurement rounds, tends to fall in the gaps of the IT system and is left to rely on technicians' individual know-how and sense of duty.

Equipment structures in SAP, the implementation of which is usually financial-driven, are often not detailed to the necessary level (individual components like valves, inspections and measurements points) and the associated instructions and documentations are usually managed in other databases or on paper. The "Work Order", designed to capture costs related to maintenance tasks, is not suited for simpler daily routine checks. Finally, the usage of SAP PM is, in most cases, limited to maintenance supervisors and "system secretaries" assigned to input data from paper reports. It does not reach the operation and inspection teams, less accustomed to using complex IT systems in their daily work. Most chemical plants face the same challenge when it comes to managing inspections, assessing their executions and handling feedback in a useful manner:

- Difficult to control and track work execution (has the inspection really be done?)
- Less accurate reporting or measurements (often handwritten report on paper)
- Results and measurements are not usable for analysis (paper reports get archived in folders, analysis would require manual input into a system, sometimes done in Excel or in separate, specialized subsystems)

As a result, the inspection loop is hard to close: significant gaps exist between the definition of inspection routines, the planning process, the execution and reporting process and finally the analysis and optimization process. Support from traditional IT systems, designed for administration and cost control, is severely lacking.

The Hanwha Ningbo team quickly came to the realization that new innovative tools were needed to support the daily inspection process, so critical for the plant operations.

Solving the problem

Faced with these challenges, Hanwha's VCM (Vinyl Chloride Monomer) operation team launched a project to search for the ideal tool to support their inspection and measurement rounds: they envisioned field technicians using mobile devices to carry out their daily work.

The project team conducted an extensive review of hardware and software vendors, to find that most of them were IT developers or hardware makers without knowledge of their industrial requirements, proposing to custom-develop whatever Hanwha would specify, a solution described as "using PDAs to access a database". This approach carried all the risks associated with IT development projects and did not meet Hanwha's expectations: finding the right supplier had become another challenge. This is when Hanwha engineers came across an article in a technical magazine, featuring a case study of Sichuan Lutianhua, a large fertilizer plants using Siveco's mobile solution, known as bluebee®, to optimize inspections. A few months later, in September 2011, Hanwha signed a contract with Siveco, a company uniquely positioned in using high-tech to solve real-life maintenance problems, for the implementation of bluebee®.

The goals of the project were direct answers to the challenges faced by Hanwha:

- To ensure that jobs are actually performed, through mandatory scanning of asset tags
- To provide a diagnosis aid for technicians, based on reported symptoms and access to existing know-how
- To allow analysis of measurement trends, in order to predict failures
- To use operation and management reports to optimize inspection plans, ultimately enabling a Risk Based Inspection (RBI) strategy

“bluebee® has helped our team achieve excellent results and has received praises from our top management in Korea.”

The project was launched in middle of October 2011 and successfully went live at the end of the year.

The bluebee® project

Siveco provided a complete turnkey solution including maintenance engineering services, the bluebee® software, hardware (mobile devices, PC server and barcode printer) as well as equipment tags (stainless steel plates).



PDA devices from Korean supplier Bluebird were selected, optimized to run bluebee® and equipped with 2D imagers for asset identification.

Two Siveco project managers were appointed, one focused on overall project management and maintenance improvement, the other on the delivery of the system. The Siveco back-office team, located in Shanghai, dedicated three people full-time to support the project.

Thanks to bluebee®, inspection technicians receive their inspection tasks and related specific guidelines on their PDA and, after scanning the tag of the corresponding asset or inspection point, record results directly in the device. For example, operation staff can input operating parameters observed during their daily walking inspection routine on pumps (outlet pressure, temperature, oil level, unusual sounds, visual checks of seals etc.). bluebee® will provide immediate feedback on abnormal readings and further assistance can be obtained if needed. All data will be summarized and analyzed in the back-office management system, also producing regular reports for management (monitoring

execution) and analysis (improvement of plans and strategy) purposes. The process is shown below:

During the implementation, Siveco organized an exchange visit between the Hanwha VCM team and Sichuan Lutianhua^[1]. Such visits, opened to all Siveco customers, are meant to promote experience sharing between different plants and have proven very successful.

What are the main differences between the Hanwha and Lutianhua projects?

- **Main focus:** Lutianhua uses bluebee® for maintenance inspections, while Hanwha uses bluebee® for daily operation inspections.
- **Inspection planning:** in Lutianhua, tasks carry various frequencies of execution and thus require using the back-office planning module to schedule and assign tasks automatically, while in inspections by the operation team have a 4-hour frequency, which do not require scheduling – the focus is purely on execution and reporting.
- **Telecommunication requirements:** Lutianhua is using the public 3G mobile network for bluebee® devices to connect to the back-office system in real-time, while Hanwha chose to synchronize data when PDA are put back into their cradle when the operator is back at the office – indeed, the plant’s potentially explosive atmosphere prohibits the use of wireless communication (ATEX directives).

Reporting process: in Hanwha, whenever abnormal circumstances appear, the inspector can take a photo with the PDA camera to create a work request in the back-office system; the manager can then immediately view it and launch related activities through his daily work wizard screen. In Lutianhua, focus is not on triggering corrective actions. Instead, when something needs to be fixed, a Work Order is entered manually in their CMMS Maximo.

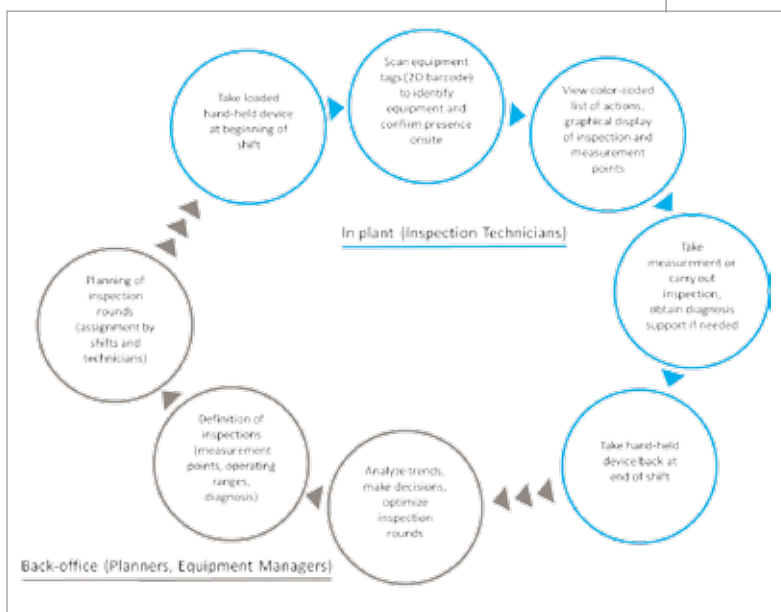
The results: three layers of benefits

First layer: enabling critical maintenance engineering activities

Hanwha experienced the first benefits of the bluebee® project during the implementation itself, as the inspection team was immediately fired up by the use of high-technology. As a direct consequence, awareness of best practices increased. The project prompted a more in-depth definition of equipment structures and inspection points, at a level of detail which did not exist in SAP PM; bar-coded steel tags were physically attached on the equipment, ensuring exact match between the database and the reality. A continuous improvement process was initiated based on a systematic analysis of data collected in the field, something which was practically impossible to achieve using a traditional paper-based process.

Second layer: immediate improvement in accuracy and traceability

Once bluebee® was put into day-to-day service,



This non-nonsense approach has delivered results over the years and echoes the experience of many industrial groups in China.

it provided a range of immediate operational benefits both from the technical and management point of view. Inspectors saw the accuracy of their records improved, as bluebee® clearly indicates inspection points, requires scanning of barcode for confirmation, warns users in case of abnormal readings and provides basic diagnosis support. Any unfinished action is clearly visible in the mobile display, through simple color warnings. From the management point-of-view, bluebee®'s back-office system keeps track of job completion and back-logs. Management and analysis reports can be sent automatically by email or queried from any PC. Thanks to physical barcode scanning, the technicians' presence at the inspection point is assured, greatly enhancing compliance with regulations and safety standards, critical in the chemical industry.

Third layer: optimization and beyond

Longer term ROI in terms of reliability and availability will derive from regular analysis of data and the resulting optimization of the maintenance strategy. The project has achieved the necessary steps to implement a

true Risk Based Inspections (RBI) strategy based on real data from the field, which is seldom seen in the industry.

According to JANG Sang Moo, Senior Manager of VCM production team:

“bluebee® has already helped our team achieve excellent results. The project has not only received great feedback from users, but also praises from our top-level management in Korea. Based on our successful experience in VCM, the PVC division has decided to start its own bluebee® project in 2012.”

Links:

[1] <http://tinyurl.com/anhuib-gEN>

[2] <http://tinyurl.com/cmmsvseamEN>

[3] <http://tinyurl.com/SGpipelinesEN>

▶ continuing from page 4

as an inevitable constraint, in fact an input for any improvement projects. It should never be used as an excuse for failure – otherwise the failure rate will climb close to 100% (which is probably the case today).

A different approach: taking it upside down

This view has come to shape Siveco's own approach to maintenance improvement. Many of our customer case studies illustrate this point.

B&G Lactic Acid, how systematic analysis helped leading lactic acid producer to quickly improve its plant reliability^[1]

This plant is the perfect example of a relatively low-tech, immature, maintenance organization and the typical “accelerated” lifecycle of a chemical plant in China, where, according to the traditional Western approach, technology would never be introduced. Instead, B&G and Siveco chose to implement a CMMS in a very practical manner to assist in fault analysis, a project which delivered reliability improvement in a relatively short time (below 6 months).

Audits of EAM/CMMS projects in Chinese power plants^[2]

Extensive experience assessing and improving CMMS implemented in power plants, the first industry to have used such technologies in China, shows that lack of industrial experience by IT vendors has led to very disappointing results over time, namely systems serving purely administrative without any value-added in terms of improvement.

Saint Gobain Pipelines, preparing maintenance from the construction stage^[3]

Saint Gobain Pipelines operates two major industrial bases in China, in Anhui Maanshan and Jiangsu Xuzhou, where it recently started

operating a new highly-automated large-diameter iron piping plant. Faced with the challenge to achieve maintenance levels never achieved before in the older plants, Saint Gobain decided to implement a CMMS as a support for maintenance preparation during the construction of the plant.

Lesson learnt

The conclusion is embodied in our latest bluebee® solutions for mobile workers: technology investment should be done on people and can be a powerful Trojan horse for best practices. Technicians feel good about it. It brings tangible improvement in maintenance practice, usually with ROI within a year, sometimes within weeks, for example when the mobile project allows us to “clean up” an underused CMMS database, thus reviving a previously underperforming IT investment.

More generally, we recommend clients not to blindly follow Western wisdom, but instead to realize that new ways are being invented in China, where projects can often deliver much better ROI. Always beware of IT projects: industrial managers should take control of them, and use them, for example when huge SAP budgets are available.

This no-nonsense approach has delivered excellent results over the years and also echoes the experience of many industrial groups in China. It is summarized in our title: technology enabled technicians vs. the intelligent plant. People are what matters in the end.

Links:

[1] <http://tinyurl.com/anhuib-gEN>

[2] <http://tinyurl.com/cmmsvseamEN>

[3] <http://tinyurl.com/SGpipelinesEN>

What is bluebee®?

A lot of readers, especially old Siveco customers, ask us about bluebee® and bluebee® cloud. They have read articles and case studies, but still have basic questions: what is it, what does it do, is it applicable for me? This month's Tips & Tricks will provide a simple introduction to bluebee suite of products and answer some of these questions. Upcoming issues will go deeper into functional component of bluebee®.

bluebee® (no capitals, even when it begins a sentence!) is Siveco's suite of mobile solutions for the "worker of tomorrow". Developed in our Shanghai R&D center since 2008, it capitalizes on over 25 years of experience in the global maintenance market and over 10 years in mobility. Running on smartphones or tablet PCs, the solution works with any back-office maintenance management database (COSWIN, Maximo, SAP, Datastream).

Unlike other mobile systems available in the Chinese market, bluebee® is a standard off-the-shelf product, configurable based on customers' needs without any programming involved. Standard products benefit from the larger customer base, support plans, regular releases (one major upgrade every year)... Without any of the issues brought by custom development, namely inadequate design by IT people without understanding of the business, bugs and lack of long-term support.

bluebee® can be implemented on single sites, typically to manage inspections in large manufacturing plants, with its own planning tool or running against an existing CMMS. It can also be deployed on large multisite organizations, such as facilities management or technical field services companies, large network infrastructures, running on bluebee® cloud.

bluebee®'s functional scope, tightly integrated with the back-office solution, is very comprehensive covering all types of field work – operational and maintenance inspections, measurement rounds, meter readings, customer service, regulatory checks, site surveys, fire safety, risk prevention, facility management, etc.

From a business improvement perspective, bluebee® is the tool to implement best practices all the way down to individual field workers, to equip workers with all the necessary know-how and to allow quick feedback to central management for decision-making purposes.

bluebee® integrates powerful mobile devices management functionality, allowing quick large-scale deployment and daily management of a large number of mobile devices (smartphones PDAs and tablets). This includes aspects related to data security, upgrades, data synchronization across various telecommunication channels, etc.

Target industries include:

- Industrial plants (chemicals, process, large factories in general)
- Facility management companies (FM service providers)
- Building owners (retailers, developers, hotels, large corporations

or government)

- Field service companies (technical inspections, maintenance service providers)
- Infrastructure projects (grid, water, metro, rail)
- Government bureaus (fire safety, agencies with a technical role)

The solution can be used at different levels, for example by a large multisite owner to manage risk and supervise its contractors, as well as by their various FM service providers to manage day-to-day work.

Quick overview of bluebee®:

bluebee®

Engineers conduct site surveys (safety, energy, maintenance) and get immediate assistance from the technical knowledge base. Non-compliance and risk areas are instantaneously reported to the central system. Scanning of asset tags (barcode or RFID) and GPS positioning ensures that inspections are actually performed.



bluebee® tablet

This Tablet-PC solution with a larger screen format ensures easy access to documents and drawings. Engineers can also create new documents onsite (photo, recordings, notes) for direct input into the structured database.

bluebee® cloud

Accessible on large touchscreen display (control center) and on any PC, bluebee® cloud provides powerful built-in management functionalities to display data in maps and charts, manage central technical data, plan and track activities, produce KPIs and management reports, manage mobile devices and integrate seamlessly with other subsystems (GIS, SCADA, video surveillance, site-level CMMS/EAM, etc.). Functional coverage includes risk prevention, maintenance, meter readings, compliance reporting based on data from the field (mobile users and online monitoring).



Specialty chemical producer selects Siveco China to implement a CMMS for its largest and most technologically-advanced plant worldwide

2012-02-09

The specialty chemical subsidiary of one of the world's largest integrated oil and gas companies has selected Siveco to implement a CMMS in its new Chinese plant. The plant, currently under construction in the Changshu Economic Development Zone, is the group's most technologically advanced. Upon completion by the end of 2012, it will also be the group's largest.

Siveco has pioneered the concept of implementing maintenance systems during the construction of a plant, thus supporting start-up and enforcing good preventive maintenance habits from day one. The CMMS will cover the

entire maintenance management scope: equipment structures and technical documentation, corrective maintenance, preventive maintenance and inspections, stock and purchasing, as well as management dashboard and reporting.

For this project, Siveco was strongly recommended by existing chemical industry customers in the Changshu area. This new reference further strengthens Siveco's presence in the Chinese chemical market, where traditional "EAM" suppliers have a long history of failed projects. Key Siveco customers in this industry



Sample management reports

also include Arkema, Bayer, BBCA & Galactic, Evonik, Hanwha, Sichuan Lutianhua, etc.

Cleaning and sanitation chemicals producer selects Siveco's maintenance solution for new Taicang plant

2012-05-26



Ecolab, a global leader in cleaning and sanitizing products, has selected Siveco to implement a maintenance management system in its new plant located in Taicang, in China's Jiangsu province. Headquartered in the US, the company employs about 40,000 people for a global revenue of 11 billion

USD in 2011. Ecolab opened its first Chinese plant in Shanghai in 1987 and has since set up six manufacturing bases in the country. In 2011, Ecolab started construction of a 100 million USD factory in Taicang, to produce disinfectant, with a daily output capacity of 1.5 million tons. Taicang is to become the group's largest production base worldwide.

The construction of the plant was completed at the end of March 2012. As part of the production start-up, Siveco

will help Ecolab organize its technical documentation and build-up its maintenance practice through the implementation of a computerized maintenance management system. The project has already started.

For more latest news, see <http://tinyurl.com/siveconewsEN>



Maintenance in China e-newsletter

Read or subscribe to our monthly newsletter
<http://www.sivecochina.com/en/maintenance-in-china/>

亦有中文版可供参阅



"EAM" is dead



So-called "EAM" solutions have a proven track record of failure in China. We know it from audits conducted in process plants all over the country. You know it from experience in your respective companies. Our track record with more than 60 clients and over 600 sites in the country proves that Chinese plants can do better than trying to replicate Western models, fundamentally unadapted to our local needs. Our bluebee® solutions "for the worker of tomorrow" are perhaps the best example. Talk to us for more information.



For more information,
call our national hotline 4006-300-213
or send us an email at info@sivecochina.com.
Subscribe to our monthly "Maintenance in China"
newsletter at www.sivecochina.com.